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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,078	10/28/2003	Abderrhamane Ounadjela	60.1543 US NP	4157

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SCHLUMBERGER-DOLL RESEARCH
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EXAMINER	
PHILLIPS, FORREST M	

ART UNIT	PAPER NUMBER
2837	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/695,078	OUNADJELA, ABDERRHAMANE	
	Examiner	Art Unit	
	FORREST M. PHILLIPS	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-57* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-57* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-57 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1- 8, 12-23,27-33,41-42,48-52, and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petermann (US5160814) in view of Mallet (US4700803).

With respect to claim 1 Petermann discloses an acoustic borehole source for generating elastic waves through an earth formation via a wall comprising:

A reaction mass (106 in figure 2B) positioned along an axis of a sonde; and at least two pads (unnumbered in figure 2c element 98 as discussed in Column 4 lines 13-36), wherein each of said at least two pads are connected to said sonde and said reaction mass using a plurality of variable angle pushing rods (94 and 96 in figures 2C and 2D) to convert an axial motion into a radial motion so that said at least two pads generate elastic waves through the earth formation upon activation of said first reaction mass as a result of impact of the pads against the wall; wherein the impedance of the acoustic borehole source may be controlled using said plurality of variable angle

pushing rods (see abstract, Column 1 lines 45-65, Column 3 lines 5-11, Column 4 lines 5-15 and 29-36). Regarding the variable angle controlling the impedance, examiner considers that while not specifically discussed by Petermann it would have been obvious to one of ordinary skill in the art that the angle at which the pushing rods were with respect to the axial motion would necessarily control the impedance, which would be controllable in the nature of the pads connection.

Petermann does not disclose wherein the first reaction mass is a motorized reaction mass.

Mallet discloses the use of a plurality of motorized reaction masses (48 in figure 3) as a means for imparting signals in a downhole environment.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Mallet to use a motorized reaction mass with the reaction mass of Petermann in order to only have to supply electrical signals as opposed to hydraulic signals to the device, thus simplifying the construction.

With respect to claim 2 Petermann further discloses further comprising anchoring means to anchor said sonde in said borehole (98 in figure 2C, see Column 4 lines 5-36).

With respect to claim 3 Peterman further discloses wherein at least two of said pads are used to anchor said sonde in said borehole (98 in figure 2c Column 4 lines 5-36).

With respect to claim 4 Petermann further discloses further comprising a receiver array (34 in figure 1) positioned for receiving said elastic waves after said elastic waves have passed through a portion of said formation.

Mallet discloses receivers positioned along the sonde (see figure 1, data recorder as attached to downhole tool).

With respect to claim 5 Petermann further discloses wherein said plurality of pushing rods (94 and 96) are hingedly connected to the first reaction mass and the pads (see figures 2c and 2D).

With respect to claims 6 and 7 while not explicitly stated, it would have been obvious to one of ordinary skill in the art to select either the weight of the mass or the stiffness to accommodate a specific source property such as radiation energy, frequency bandwidth, and resonance frequency. Given the nature of the device one of ordinary skill would be familiar with the properties governing the vibratory waves to be created by the tool and select the properties of the inputs to govern the properties of the outputs to the extent possible in the design of the tool.

With respect to claim 8 Petermann discloses an acoustic borehole source for generating elastic waves through an earth formation via a wall comprising:

A first reaction mass (106 in figure 2B) positioned along an axis of a sonde; and at least two pads (unnumbered in figure 2c element 98 as discussed in Column 4 lines 13-36), wherein each of said at least two pads are connected to said sonde and said reaction mass using a plurality of variable angle pushing rods (94 and 96 in figures 2C and 2D) to convert an axial motion into a radial motion so that said at least two pads generate elastic waves through the earth formation upon activation of said first reaction mass as a result of impact of the pads against the wall; wherein the impedance of the acoustic borehole source may be controlled using said plurality of variable angle

pushing rods (see abstract, Column 1 lines 45-65, Column 3 lines 5-11, Column 4 lines 5-15 and 29-36). Regarding the variable angle controlling the impedance, examiner considers that while not specifically discussed by Petermann it would have been obvious to one of ordinary skill in the art that the angle at which the pushing rods were with respect to the axial motion would necessarily control the impedance, which would be controllable in the nature of the pads connection.

Petermann does not disclose wherein the first reaction mass is a motorized reaction mass, or the presence of a second reaction mass.

Mallet discloses the use of a plurality of motorized reaction masses (48 in figure 3) as a means for imparting signals in a downhole environment.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Mallet to use a motorized reaction mass with the reaction mass of Petermann in order to only have to supply electrical signals as opposed to hydraulic signals to the device, thus simplifying the construction.

With respect to claim 12 Petermann further discloses further comprising anchoring means to anchor said sonde in said borehole (98 in figure 2C, see Column 4 lines 5-36).

With respect to claim 13 Peterman further discloses wherein at least two of said pads are used to anchor said sonde in said borehole (98 in figure 2c Column 4 lines 5-36).

With respect to claim 14 Petermann further discloses further comprising a receiver array (34 in figure 1) positioned for receiving said elastic waves after said elastic waves have passed through a portion of said formation.

Mallet discloses receivers positioned along the sonde (see figure 1, data recorder as attached to downhole tool).

With respect to claim 15 Petermann further discloses wherein said plurality of pushing rods (94 and 96) are hingedly connected to the first reaction mass and the pads (see figures 2c and 2D).

With respect to claims 16 and 17 while not explicitly stated, it would have been obvious to one of ordinary skill in the art to select either the weight of the mass or the stiffness to accommodate a specific source property such as radiation energy, frequency bandwidth, and resonance frequency. Given the nature of the device one of ordinary skill would be familiar with the properties governing the vibratory waves to be created by the tool and select the properties of the inputs to govern the properties of the outputs to the extent possible in the design of the tool.

With respect to claim 18 Petermann discloses an acoustic borehole source for generating elastic waves through an earth formation via a wall comprising:

A reaction mass (106 in figure 2B) positioned along an axis of a borehole; and at least two pads (unnumbered in figure 2c element 98 as discussed in Column 4 lines 13-36), wherein each of said at least two pads are connected to said borehole and said reaction mass using a plurality of variable angle pushing rods (94 and 96 in figures 2C and 2D) to convert an axial motion into a radial motion so that said at least two pads

generate elastic waves through the earth formation upon activation of said first reaction mass as a result of contact of the pads with the wall; wherein the impedance of the acoustic borehole source may be controlled using said plurality of variable angle pushing rods (see abstract, Column 1 lines 45-65, Column 3 lines 5-11, Column 4 lines 5-15 and 29-36). Regarding the variable angle controlling the impedance, examiner considers that while not specifically discussed by Petermann it would have been obvious to one of ordinary skill in the art that the angle at which the pushing rods were with respect to the axial motion would necessarily control the impedance, which would be controllable in the nature of the pads connection.

Petermann does not disclose wherein the first reaction mass is a motorized reaction mass.

Mallet discloses the use of a plurality of motorized reaction masses (48 in figure 3) as a means for imparting signals in a downhole environment.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Mallet to use a motorized reaction mass with the reaction mass of Petermann in order to only have to supply electrical signals as opposed to hydraulic signals to the device, thus simplifying the construction.

With respect to claim 19 Petermann further discloses further comprising a receiver array (34 in figure 1) positioned for receiving said elastic waves after said elastic waves have passed through a portion of said formation.

Mallet discloses receivers positioned along the sonde (see figure 1, data recorder as attached to downhole tool).

With respect to claim 20 Petermann further discloses wherein said plurality of pushing rods (94 and 96) are hingedly connected to the first reaction mass and the pads (see figures 2c and 2D).

With respect to claims 21-22 while not explicitly stated, it would have been obvious to one of ordinary skill in the art to select either the weight of the mass or the stiffness to accommodate a specific source property such as radiation energy, frequency bandwidth, and resonance frequency. Given the nature of the device one of ordinary skill would be familiar with the properties governing the vibratory waves to be created by the tool and select the properties of the inputs to govern the properties of the outputs to the extent possible in the design of the tool.

With respect to claim 23 Petermann discloses an acoustic borehole source for generating elastic waves through an earth formation via a wall comprising:

A reaction mass (106 in figure 2B) positioned along an axis of a borehole; and at least two pads (unnumbered in figure 2c element 98 as discussed in Column 4 lines 13-36), wherein each of said at least two pads are connected to said borehole and said reaction mass using a plurality of variable angle pushing rods (94 and 96 in figures 2C and 2D) to convert an axial motion into a radial motion so that said at least two pads generate elastic waves through the earth formation upon activation of said first reaction mass as a result of contact of the pads with the wall; wherein the impedance of the acoustic borehole source may be controlled using said plurality of variable angle pushing rods (see abstract, Column 1 lines 45-65, Column 3 lines 5-11, Column 4 lines 5-15 and 29-36). Regarding the variable angle controlling the impedance, examiner

considers that while not specifically discussed by Petermann it would have been obvious to one of ordinary skill in the art that the angle at which the pushing rods were with respect to the axial motion would necessarily control the impedance, which would be controllable in the nature of the pads connection.

Petermann does not disclose wherein the first reaction mass is a motorized reaction mass, or the presence of a second reaction mass.

Mallet discloses the use of a plurality of motorized reaction masses (48 in figure 3) as a means for imparting signals in a downhole environment.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Mallet to use a motorized reaction mass with the reaction mass of Petermann in order to only have to supply electrical signals as opposed to hydraulic signals to the device, thus simplifying the construction.

With respect to claim 27 Petermann further discloses further comprising a receiver array (34 in figure 1) positioned for receiving said elastic waves after said elastic waves have passed through a portion of said formation.

Mallet discloses receivers positioned along the sonde (see figure 1, data recorder as attached to downhole tool).

With respect to claim 28 Petermann further discloses wherein said plurality of pushing rods (94 and 96) are hingedly connected to the first reaction mass and the pads (see figures 2c and 2D).

With respect to claims 29 and 30 while not explicitly stated, it would have been obvious to one of ordinary skill in the art to select either the weight of the mass or the

stiffness to accommodate a specific source property such as radiation energy, frequency bandwidth, and resonance frequency. Given the nature of the device one of ordinary skill would be familiar with the properties governing the vibratory waves to be created by the tool and select the properties of the inputs to govern the properties of the outputs to the extent possible in the design of the tool.

With respect to claims 31-33, 41-42 Examiner considers that the method steps are necessitated by the product structure of Petermann as modified.

With respect to claims 48-52, and 55 Examiner considers that Petermann as modified discloses the pads and pushing rods are so configured, the hinged ends of the rods are independent of one another therefore have the ability to be at different angles than each other.

2.Claims 9-10,24-25,34-36, 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petermann (Us5160814) in view of Mallet (US4700803) as applied to claim8 above, and further in view of Paulsson (US4715470).

With respect to claims 9 and 24 Petermann as modified discloses wherein the first reaction mass is connected to one end of each pad using a plurality of pushing rods such that said pads move at an angle relative said axis.

Petermann as modified does not disclose wherein said first and second reaction masses are connected to opposite ends of each pad.

Paulsson discloses reaction masses (sections 130 and 230 in figure 3) connected to opposite ends of pads (166 in figure 3).

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Paulsson to provide motorized reaction masses on opposite ends of the pads in order to provide means for imparting multiple types of inputs to provide a greater degree of information derived form a single tool.

With respect to claims 10 and 25 Paulsson further discloses the use of a compression spring (346 in figure 6) between reaction masses.

With respect to claims 34-36 and 43-44 Examiner considers that the method steps are necessitated by the product structure of Petermann as modified.

With respect to claim 53 and 56 Examiner considers that Petermann as modified discloses the pads and pushing rods are so configured, the hinged ends of the rods are independent of one another therefore have the ability to be at different angles than each other.

3.Claims 11, 26,37-40,45-47, 54 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petermann (US5160814) in view of Mallet (US4700803) and Paulsson (US4715470) as applied to claim 10 above, and further in view of Brett (US5309405).

With respect to claims 11 and 26Petermann as modified discloses the invention as claimed except for third and fourth masses and the connection between the reaction masses and the pads.

Brett discloses (figure 40) the use of multiple reaction masses, connected to one another in series striking the wall of a borehole (12a-c).

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Brett to have multiple masses in linear series striking the wall with the teachings of Petermann as modified, and have the push rods connecting the masses in such a manner as to allow for series striking of the wall.

The motivation for doing so would be to allow for a delayed striking of the various masses to create a more complex vibrational energy pattern (see Column 9 lines 1-3) With respect to claims 37-40 and 45-47 Examiner considers the method step to be necessitated by the product structure.

With respect to claims 54 and 57 Examiner considers that Petermann as modified discloses the pads and pushing rods are so configured, the hinged ends of the rods are independent of one another therefore have the ability to be at different angles than each other.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FORREST M. PHILLIPS whose telephone number is (571)272-9020. The examiner can normally be reached on Monday through Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Benson can be reached on 5712722227. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/F. M. P./
Examiner, Art Unit 2837
/Walter Benson/
Supervisory Patent Examiner, Art Unit 2837